

APPARATUS FOR APPLYING ADHESIVE HANDLES TO LOADS

FIELD OF THE INVENTION

The present invention relates to an apparatus for applying adhesive handles to loads driven along a path, for example in a packaging system.

BACKGROUND

Many goods intended for domestic use (such as drinks, paper rolls, washing powders and liquids, soaps) are often packed in multipacks, including a rather large number of single items, kept together by a box or by a heat shrinkable wrapping. Such packs are normally named loads, and such name will be used throughout the following description and claims.

Preferably, loads are provided with an upper carrying handle, to allow them to be easily carried by a single hand.

Very much appreciated for their simplicity and their low cost are adhesive handles. A handle of this kind normally consists of a length of adhesive tape, the middle portion of which is made non-adhesive, for example by applying a paper strip. Therefore, the handle includes, one after the other, an adhesive portion, a non-adhesive portion and a further adhesive portion.

Handles of this type are described, for example, in U.S. Pat. No. 4,906,319, together with a method and apparatus for their manufacture and application to loads having a heat shrinkable wrapping. According to this reference, handles are constructed from non-heat-shrinkable tape and paper tape portions which are cut from one another and applied to the hot shrinkable film before it is wrapped around the goods. After wrapping a load, the wrapping is heat shrunk about the load which is thereby provided with an adhesive handle.

A similar method is described in U.S. Pat. Nos. 4,700,528, and 4,830,895 wherein adhesive tape handles are applied to a shrinkable wrapping before heating. In this case the handle consists of a length of adhesive tape (without any non-adhesive portion) which is adhered to the wrapping. A set of perforation lines are provided through the wrapping alongside the central portion of the handle. After shrinking, openings are formed along the central portion of the handle to allow the insertion of a hand to grasp the load. The non-adhesive portion consists of the central portion of adhesive tape adhered to the wrapping between the set of perforation lines.

U.S. Pat. No. 3,557,516 describes a similar method comprising the steps of adhering an unshrinkable ribbon material to a shrinkable film material at spaced intervals, wrapping the film around a load, and shrinking the film against the load to cause the unshrinkable ribbon to bulge outwardly to define a carrying handle.

All the previous methods describe the application of handles to a wrapping material before wrapping the load and shrinking the wrapping material.

U.S. Pat. No. 4,758,301 describes an apparatus for applying handles to loads comprising an intermittently driven rotating drum having on its outer peripheral surface a suction means for holding a handle tape supplied from a reel. The drum moves the handle tape through a cutter to cut predetermined lengths of the tape to form handles and then, to a position wherein handles are adhesively applied to a

load by applicator arms.

Apparatuses to apply adhesive tape directly to loads are also generally known in the art. Typically, they comprise a plurality of pivotally mounted arms which guide the tape to be adhered on the load and they require a separate cutting means to cut a predetermined length of tape. These apparatuses could be used for applying tape handles, if the predetermined length corresponds to that of a handle, but, they are complex and expensive, and require expensive maintenance due to their high number of moving parts.

An example of this type of machine is disclosed in Italian patent No. 1,142,303. Described is an apparatus for applying a length of adhesive tape around a load, comprising a first applying arm to adhere a leading end of adhesive tape to the front side of the coming load and two other springs-arms to press the tape on the upper and back side of the load. A further arm is provided to cut the length of tape.

BRIEF DESCRIPTION OF THE INVENTION

The present invention provides an apparatus for applying an adhesive handle to a load, both if it is a pack of items kept together by a unitizing means such as heat-shrunk wrapping or if it is a single article such as a box.

The disadvantages and shortcoming associated with the prior art are overcome by the present invention by providing a preferred apparatus for applying adhesive handles to loads that are driven along a path, characterized by comprising a rotatable lever having two opposing arms, either of the arms being in turn positioned within the path. A holding means is provided on the lever for carrying a handle to lay on a surface of the two arms of the lever with its non-adhesive side against the surface of the lever and its adhesive side exposed. Additionally a lever driving means is provided to controllably rotate the lever by about 180° after a load that is driven along the path hits an arm of the lever that is positioned within the path.

With such an apparatus, the front side of each load that is driven along the path hits against a first arm of the lever, i.e., the arm positioned within the path. On that arm, one of the adhesive portions of the handle is exposed, so that such adhesive portion can be adhered to the load. Immediately thereafter, because of the impact of the load, the lever driving means is activated so as to rotate the lever by about 180° at a rotational speed so that the other arm of the lever hits the back side of the load. At that moment, the other adhesive portion of the handle, laying exposed on such other arm of the lever, is adhered to the load. Thus, the two adhesive portions of the handle are adhered to spaced portions of the load, while the non-adhesive side extends therebetween, over the load.

The object of the present invention may also be attained by an apparatus as described above, but comprising a lever having only one arm provided that the lever driving means controls and drives this single arm to rotate by about 360° after a load that is driven along the path hits the arm positioned in its rest position within the path.

Accordingly, another embodiment of the present invention comprises an apparatus for applying adhesive handles to loads driven along a path, characterized by comprising a lever having one arm, positioned in a rest position across the path. A holding means is provided on the arm for carrying a handle to lay on a surface of the arm with its non-adhesive side against the surface of the arm and its adhesive side exposed. Additionally, a lever driving means is provided to controllably rotate the arm by about 360° after a load that is